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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,539	11/09/2000	Benjamin N. Eldridge	276440-3	5812

7590 08/24/2004  
FormFactor, Inc  
Legal Department  
2140 Research Drive  
Livermore, CA 94550

EXAMINER

TSUKERMAN, LARISA Z

ART UNIT PAPER NUMBER

2833

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/710,539

Applicant(s)

ELDRIDGE ET AL.

Examiner

Larisa Z Tsukerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-6, 8, 13, 14, 17, 19, 21, 25-27, 38, 41, 48, 51 and 71-103 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 83-103 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-6, 13, 14, 17, 19, 21, 25-27, 38, 41, 48, 51 and 71-82 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/09/2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

Applicant's election without traverse of claims 3-6, 13, 14, 17, 19, 21, 25 – 27, 38, 41, 48, 51 and 71 - 82 in the reply filed on March 11, 2004 is acknowledged.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

**Claims 3 – 6, 13, 14, 17, 19, 21, 25 – 27, 38, 41, 48, 51 and 71 – 73** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 71**, line 4, is indefinite in that term "increase an area of moment of inertia" has no clear meaning unless set forth in relationship to another structure. Any shape of beam could be read as a shape contoured to increase moment of inertia.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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**Claims 19, 21, 25, 38, 41, 48, 51 and 71 – 82** are rejected under 35 U.S.C. 102(b) as being anticipated by Grube et al. (US 2001/0012739).

**In regard to claim 71**, as best understood, Grube et al. discloses a microelectronic spring structure 140 comprising:

a base 103,124 secured to a terminal 112 of an electronic component 114; and

a beam 138 extending from the base 103,124 and spaced from the electronic component 114, a cross-sectional width of the beam contoured to increase an area moment of inertia of the beam (see page 5, [0057]).

**In regard to claim 19**, Grube et al. discloses the beam 138 is contoured in a lengthwise direction (see Figs. 5B and 5C).

**In regard to claim 21**, Grube et al. discloses the cross-sectional width of beam 138 is generally V-shaped (see Fig. 5B and 5C).

**In regard to claim 25**, Grube et al. discloses the beam 138, in a lengthwise sectional view, has a stepped portion (see area 122) connected to the base 103,124 (see Fig. 2A).

**In regard to claim 38**, Grube et al. discloses the base 103,124 and the beam 138 are integrally formed (see Fig. 5A and 5B).

**In regard to claim 41**, Grube et al. discloses the microelectronic spring structure 140, wherein the beam 138, viewed in a direction normal to the electronic component, is tapered so as to have a generally triangular shape (see Figs. 5B and 5C).

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**In regard to claim 48**, Grube et al. discloses the microelectronic spring structure 140, wherein the base 103,124 and the beam 138 are integrally formed (see Figures) and comprise a resilient material (see Fig. 2B), as claimed.

**In regard to claim 51**, Grube et al. discloses the base 103,124 and the beam 138 are integrally formed and comprises a layer of an electrically conductive seed material and a layer of electroplated metallic material (see page 1, [0010] and [0011]).

**In regard to claims 72 and 73**, Grube et al. discloses that electronic component is a semiconductor die from a plurality of semiconductor dice composing an unsingulated semiconductor wafer (see page 1, [005] and page 4, [0046]).

**In regard to claim 74**, Grube et al. discloses an electronic component 114 comprising:

- a terminal 112; and

- a contact structure 100 comprising: a base 103,124 secured to the terminal 112; and a beam 104 extending from the base 103,124 and spaced from the electronic component 114, a cross-sectional width of the beam contoured in a "V" shape (see Figs. 5B and 5C).

**In regard to claims 75 and 76**, Grube et al. discloses that electronic component is a semiconductor die from a plurality of semiconductor dice composing an unsingulated semiconductor wafer (see page 1, [005] and page 4, [0046]).

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**In regard to claim 77**, Grube et al. discloses the beam 104 is contoured along a length thereof.

**In regard to claim 78**, Grube et al. discloses the beam 104 has a generally triangular shape (see Fig. 5C).

**In regard to claim 79**, Grube et al. discloses the base 103,124 and the beam 104 are integrally formed.

**In regard to claim 80**, Grube et al. discloses the base 103,124 and the beam 104 comprise a resilient material (see Fig. 2B).

**In regard to claim 81**, Grube et al. discloses the base 103,124 and the beam 104 comprise a layer of an electrically conductive seed material and a layer of electroplated metallic material (see page 1, "lithographic process" and "layer" in [0010] and [0011]).

**In regard to claim 82**, Grube et al. discloses a plurality of the terminals 112 and a plurality of the contact structures 100 (see Figs. 7 and 8).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 3 - 6, 8, 13 – 14 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grube et al. (US 2001/0012739).

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Grube et al. discloses the instant claimed invention except for the beam comprises various dimensions, such as an unloaded height over the electronic component, a width, a length, elastic deflection ratio, elastic range, spring rate and deflection ranges. It would have been an obvious matter of the design choice to have the beam comprises various dimensions, materials, springs rate and deflection ranges, since such a modification would have involved a mere change in the shape and material of a component. A change in shape and material is generally recognized as being within the level of ordinary skill in the art. In re dailey, 357 F.2d 669 USPQ 47 (CCPA 1966) and In re Leshin, 125 USPQ 416.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Fjelstad et al. (5632631), Mathieu et al. (US 2004/0142583), Eldridge et al. (US 2002/0055282), (5974662), Khandros (6538214), Slocum et al. (6497581), Fijten et al. (6113440), Landman (3701071),

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larisa Z Tsukerman whose telephone number is (571)-272-2015. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A Bradley can be reached on (571)-272-2800 ex.

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33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT  
July 28, 2004

  
P. AUSTIN BRADLEY  
SUPERVISORY PATENT EXAMINER  
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